ABSTRACT

Utilization of Cassava Stem Biomass Waste as a Material for Porous Paving Block Production

By

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.This study investigates the utilization of cassava stem waste as a pore-forming agent in the production of porous paving blocks. Cassava stem waste, which is abundantly available in Lampung Province and contains cellulose, hemicellulose, and lignin, presents potential for application in the construction sector. The use of porous paving blocks is considered a viable solution to urban waterlogging problems, as it facilitates the infiltration of rainwater into the soil. The objective of this research is to utilize cassava stem biomass waste in the manufacture of porous paving blocks and to examine the influence of its incorporation as an additive material. The experimental procedure involved adding cassava stem waste at varying proportions (2%, 4%, 6%, and 8%) into the paving block mixture. The specimens were subjected to a curing period of 28 days, followed by quality assessments. The evaluations included visual inspection, structural entirety, density, water absorption, infiltration rate, and compressive strength. The findings indicate that the produced paving blocks met the standard requirements for entirety and infiltration rate according to quality grade D, with the highest water absorption recorded at 35.036% in the P4 variation. Nevertheless, the highest compressive strength achieved was 4.81 MPa, which does not satisfy the minimum compressive strength requirement for grade D. An increase in the proportion of cassava stem waste was observed to enhance porosity and water absorption capacity, yet concurrently resulted in a reduction of both compressive strength and density

Keywords: Cassava stem waste, porous paving block, infiltration rate, compressive strength, biomass utilization.

ABSTRAK

Pemanfaatan Limbah Biomassa Batang Singkong Sebagai Bahan Pembuatan *Paving Block Porous*

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Penelitian ini memanfaatkan limbah batang singkong sebagai bahan untuk membentuk pori pada paving block porous. Limbah batang singkong yang melimpah di Provinsi Lampung dan mengandung selulosa, hemiselulosa, dan lignin yang dapat dimanfaatkan dalam bidang konstruksi. Penggunaan paving block porous dapat menjadi solusi masalah genangan air di daerah perkotaan karena memungkinkan air hujan meresap ke dalam tanah. Tujuan dari penelitian ini ialah memanfaatkan limbah biomassa batang singkong untuk pembuatan *paving block porous* dan mempelajari pengaruh penggunaan limbah batang singkong sebagai bahan tambahan dalam pembuatan *paving block porous.* Penelitian dilakukan dengan mencampurkan limbah batang singkong (variasi 2%, 4%, 6%, dan 8%) ke dalam adonan paving block. *Paving block* akan melalui masa *curing* selama 28 hari dan kemudian dilanjutkan dengan pengujian mutu. Pengujian meliputi tampilan fisik, keutuhan, densitas, daya resap air, laju infiltrasi, dan kuat tekan. Hasil menunjukkan paving block memiliki keutuhan dan laju infiltrasi yang sudah sesuai dengan standar mutu D, dengan daya resap air tertinggi 35,036% pada P4. Namun, kuat tekan tertinggi hanya 4,81 MPa, sehingga tidak memenuhi standar kuat tekan mutu D. Semakin tinggi persentase limbah batang singkong, semakin besar porositas dan daya resap, namun diiringi penurunan kuat tekan serta densitas.

Kata Kunci: Limbah batang singkong, paving block porous, laju infiltrasi, kuat tekan, pemanfaatan biomassa.